

# Operations

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# Bay Delta Standards

## California Department of Water Resources - Division of Operations and Maintenance Operations Control Office

The standards listed below have been implemented under the State Water Resources Control Board Decision-1641.

### Bay-Delta Standards **DRAFT** Contained in D-1641

| CRITERIA                                   | JAN             | FEB            | MAR                            | APR                                | MAY                     | JUN             | JUL            | AUG | SEP                 | OCT               | NOV                         | DEC |
|--|-----------------|----------------|--------------------------------|------------------------------------|-------------------------|-----------------|----------------|-----|---------------------|-------------------|-----------------------------|-----|
| <b>FLOW/OPERATIONAL</b>                    |                 |                |                                |                                    |                         |                 |                |     |                     |                   |                             |     |
| • <b>Fish and Wildlife</b>                 |                 |                |                                |                                    |                         |                 |                |     |                     |                   |                             |     |
| SWP/CVP Export Limits                      |                 |                |                                |                                    | 1,500cfs <sup>[1]</sup> |                 |                |     |                     |                   |                             |     |
| Export/Inflow Ratio <sup>[2]</sup>         | 65%             |                |                                | 35% of Delta Inflow <sup>[3]</sup> |                         |                 |                |     | 65% of Delta Inflow |                   |                             |     |
| Minimum Delta Outflow                      | <sup>[4]</sup>  |                |                                |                                    |                         |                 |                |     | 3,000 - 8,000 cfs   |                   |                             |     |
| Habitat Protection Outflow                 |                 |                |                                | 7,100 - 29,200 cfs                 |                         |                 |                |     |                     |                   |                             |     |
| Salinity Starting Condition <sup>[5]</sup> |                 | <sup>[6]</sup> |                                |                                    |                         |                 |                |     |                     |                   |                             |     |
| River Flows:                               |                 |                |                                |                                    |                         |                 |                |     |                     |                   |                             |     |
| @ Rio Vista                                |                 |                |                                |                                    |                         |                 |                |     |                     | 3,000 - 4,500 cfs |                             |     |
| @ Vernalis - Base                          |                 |                | 710 - 3,420 cfs <sup>[8]</sup> |                                    |                         |                 | <sup>[8]</sup> |     |                     |                   |                             |     |
| - Pulse                                    |                 |                |                                |                                    | <sup>[9]</sup>          |                 |                |     |                     | +2±TA             |                             |     |
| Delta Cross Channel Gates                  | <sup>[10]</sup> |                |                                | Closed                             |                         | <sup>[11]</sup> |                |     |                     |                   | Conditional <sup>[12]</sup> |     |

#### WATER QUALITY STANDARDS

|  |         |        |  |  |                  |  |  |  |  |        |                 |      |
|--|---------|--------|--|--|------------------|--|--|--|--|--------|-----------------|------|
| • <b>Municipal and Industrial</b>          |         |        |  |  |                  |  |  |  |  |        |                 |      |
| All Export Locations                       |         |        |  |  |                  |  |  |  |  |        |                 |      |
| Contra Costa Canal                         |         |        |  |  |                  |  |  |  |  |        |                 |      |
| • <b>Agriculture</b>                       |         |        |  |  |                  |  |  |  |  |        |                 |      |
| Western/Interior Delta                     |         |        |  |  |                  |  |  |  |  |        |                 |      |
| Southern Delta <sup>[14]</sup>             |         | 1.0 mS |  |  |                  |  |  |  |  | 1.0 mS |                 |      |
| • <b>Fish and Wildlife</b>                 |         |        |  |  |                  |  |  |  |  |        |                 |      |
| San Joaquin River Salinity <sup>[15]</sup> |         |        |  |  | 14-day avg, 0.44 |  |  |  |  |        |                 |      |
| Suisun Marsh Salinity <sup>[16]</sup>      | 12.5 EC | 8.0 EC |  |  | 11.0 EC          |  |  |  |  | 19.0   | <sup>[17]</sup> | 15.5 |

1)

Maximum 3-day running average of combined export rate (cfs) which includes Tracy Pumping Plant and Clifton Court Forebay Inflow less Byron-Bethany

| Year Type      | All  |
|----------------|--|
| Apr15 - May15* | The greater of 1,500 or 100% of 3-day avg. Vernalis flow |

\* This time period may need to be adjusted to coincide with fish migration. Maximum export rate may be varied by CalFed Op's group.

2)

The maximum percentage of average Delta inflow (use 3-day average for balanced conditions with storage withdrawal, otherwise use 14-day average) diverted at Clifton Court Forebay (excluding Byron-Bethany pumping) and Tracy Pumping Plant using a 3-day average. (These percentages may be adjusted

3)

The maximum percent Delta inflow diverted for Feb may vary depending on the January 8RI.

| Jan 8RI               | Feb exp. limit |
|-----------------------|----------------|
| ≤ 1.0 MAF             | 45%            |
| between 1.0 & 1.5 MAF | 35%-45%        |
| > 1.5 MAF             | 35%            |

4)

Minimum monthly average Delta outflow (cfs). If monthly standard ≤ 5,000 cfs, then the 7-day average must be within 1,000 cfs of standard; if monthly standard > 5,000 cfs, then the 7-day average must be ≥ 80% of standard.

| Year Type | All    | W     | AIH   | BH    | D     | C     |
|-----------|--------|-------|-------|-------|-------|-------|
| Jan       | 4,500* |       |       |       |       |       |
| Jul       |        | 8,000 | 8,000 | 6,500 | 5,000 | 4,000 |
| Aug       |        | 4,000 | 4,000 | 4,000 | 3,500 | 3,000 |
| Sep       | 3,000  |       |       |       |       |       |
| Oct       |        | 4,000 | 4,000 | 4,000 | 4,000 | 3,000 |
| Nov-Dec   |        | 4,500 | 4,500 | 4,500 | 4,500 | 3,500 |

\* Increase to 6,000 if the Dec 8RI is greater than 800 TAF

5)

Minimum 3-day running average of daily Delta outflow of 7,100 cfs OR: either the daily average or 14-day running average EC at Collinsville is less than 2.64 mmhos/cm (This standard for March may be relaxed if the Feb 8RI is less than 500 TAF. The standard does not apply in May and June if the May estimate of the SRIIS < 8.1 MAF at the 90% exceedence level in which case a minimum 14-day running average flow of 4,000 cfs is required.) For additional Delta outflow objectives, see **TABLE A**.

6)

February starting salinity: If Jan 8RI > 900 TAF, then the daily or 14-day running average EC @ Collinsville must be ≤ 2.64 mmhos/cm for at least one day between Feb 1-14. If Jan 8RI is between 650 TAF and 900 TAF, then the CalFed Op's group will determine if this requirement must be met.

7)

Rio Vista minimum monthly average flow rate in cfs (the 7-day running average shall not be less than 1,000 below the monthly objective).

| Year Type | All   | W     | AN    | BN    | D     | C     |
|-----------|-------|-------|-------|-------|-------|-------|
| Sep       | 3,000 |       |       |       |       |       |
| Oct       |       | 4,000 | 4,000 | 4,000 | 4,000 | 3,000 |
| Nov-Dec   |       | 4,500 | 4,500 | 4,500 | 4,500 | 3,500 |

8)

BASE Vernalis minimum monthly average flow rate in cfs (the 7-day running average shall not be less than 20% below the objective). Take the higher objective if X2 is required to be west of Chipps Island.

| Year Type                     | All | W                 | AN                | BN                | D                 | C               |
|-------------------------------|-----|-------------------|-------------------|-------------------|-------------------|-----------------|
| Feb-Apr14<br>and<br>May16-Jun |     | 2,130 or<br>3,420 | 2,130 or<br>3,420 | 1,420 or<br>2,280 | 1,420 or<br>2,280 | 710 or<br>1,140 |

9)

PULSE Vernalis minimum monthly average flow rate in cfs. Take the higher objective if X2 is required to be west of Chipps Island.

| Year Type        | All    | W                 | AN                | BN                | D                 | C                 |
|------------------|--------|-------------------|-------------------|-------------------|-------------------|-------------------|
| Apr15 -<br>May15 |        | 7,330 or<br>8,620 | 5,730 or<br>7,020 | 4,620 or<br>5,480 | 4,020 or<br>4,880 | 3,110 or<br>3,540 |
| Oct              | 1,000* |                   |                   |                   |                   |                   |

\* Up to an additional 28 TAF pulse/attraction flow to bring flows up to a monthly average of 2,000 cfs except for a critical year following a critical year. Time period based on real-time monitoring and determined by CalFed Op's group.

10)

For the Nov-Jan period, Delta Cross Channel gates may be closed for up to a total of 45 days.

11)

For the May 21-June 15 period, close Delta Cross Channel gates for a total of 14 days per CALFED Op's group. During the period the Delta cross channel gates may close 4 consecutive days each week, excluding weekends.

12)

Minimum # of days that the mean daily chlorides  $\leq 150$  mg/l must be provided in intervals of not less than 2 weeks duration. Standard applies at Contra Costa Canal Intake or Antioch Water Works Intake.

| Year Type | W   | AN  | BN  | D   | C   |
|-----------|-----|-----|-----|-----|-----|
| # Days    | 240 | 190 | 175 | 165 | 155 |

13)

The maximum 14-day running average of mean daily EC (mmhos/cm) depends on water year type.

| Year Type  | WESTERN DELTA                      |                                      |                                    |                                      | INTERIOR DELTA                     |                                      |                                    |                                      |
|------------|------------------------------------|--------------------------------------|------------------------------------|--------------------------------------|------------------------------------|--------------------------------------|------------------------------------|--------------------------------------|
|            | Sac River @ Emmaton                |                                      | SJR @ Jersey Point                 |                                      | Mokelumne R @ Terminous            |                                      | SJR @ San Andreas                  |                                      |
|            | 0.45 EC from April 1 to date shown | EC value from date shown to Aug 15 * | 0.45 EC from April 1 to date shown | EC value from date shown to Aug 15 * | 0.45 EC from April 1 to date shown | EC value from date shown to Aug 15 * | 0.45 EC from April 1 to date shown | EC value from date shown to Aug 15 * |
| <b>W</b>   | Aug 15                             |                                      | Aug 15                             |                                      | Aug 15                             |                                      | Aug 15                             |                                      |
| <b>All</b> | Jul 1                              | 0.63                                 | Aug 15                             |                                      | Aug 15                             |                                      | Aug 15                             |                                      |
| <b>BH</b>  | Jun 20                             | 1.14                                 | Jun 20                             | 0.74                                 | Aug 15                             |                                      | Aug 15                             |                                      |
| <b>D</b>   | Jun 15                             | 1.67                                 | Jun 15                             | 1.35                                 | Aug 15                             |                                      | Jun 25                             | 0.58                                 |
| <b>C</b>   |                                    | 2.78                                 |                                    | 2.20                                 |                                    | 0.54                                 |                                    | 0.87                                 |

\*When no date is shown, EC limit continues from April 1.

14)

As per D-1641, for San Joaquin River at Vernalis: however, the April through August maximum 30-day running average EC for San Joaquin River at Brandt Bridge, Old River near Middle River, and Old River at Tracy Road Bridge shall be 1.0 EC until April 1, 2005 when the value will be 0.7 EC.

15)

Compliance will be determined between Jersey Point & Prisoners Point.

Does not apply in critical years or in May when the May 90% forecast of SRI  $\leq$  8.1 MAF.

During deficiency period, the maximum monthly average mhtEC at Western Suisun Marsh stations as per SMPA is:

| Month          | mhtEC |
|----------------|-------|
| <b>Oct</b>     | 19.0  |
| <b>Nov</b>     | 16.5  |
| <b>Dec-Mar</b> | 15.6  |
| <b>Apr</b>     | 14.0  |
| <b>May</b>     | 12.5  |

In November, maximum monthly average mhtEC = 16.5 for Western Marsh stations and maximum monthly average mhtEC = 15.5 for Eastern Marsh stations in all periods types.

TABLE A

Number of Days When Max. Daily Average Electrical Conductivity of 2.64 mmhos/cm Must Be Maintained. (This can also be met with a maximum 14-day running average EC of 2.64 mmhos/cm, or 3-day running average Delta outflows of 11,400 cfs and 29,200 cfs, respectively.) Port Chicago Standard is triggered only when the 14-day average EC for the last day of the previous month is 2.64 mmhos/cm or less. PMI is previous month's 8RI. If salinity/flow objectives are met for a greater number of days than required for any month, the excess days shall be applied towards the following month's requirement. The number of day's for values of the PMI between those specified below shall be determined by linear interpolation.

| PMI<br>(TAF) | Chippis Island<br>(Chippis Island Station D10) |     |     |     |     |
|--------------|--|-----|-----|-----|-----|
|              | FEB  | MAR | APR | MAY | JUN |
| ≤ 500        | 0  | 0   | 0   | 0   | 0   |
| 750          | 0  | 0   | 0   | 0   | 0   |
| 1000         | 28*  | 12  | 2   | 0   | 0   |
| 1250         | 28   | 31  | 6   | 0   | 0   |
| 1500         | 28   | 31  | 13  | 0   | 0   |
| 1750         | 28   | 31  | 20  | 0   | 0   |
| 2000         | 28   | 31  | 25  | 1   | 0   |
| 2250         | 28   | 31  | 27  | 3   | 0   |
| 2500         | 28   | 31  | 29  | 11  | 1   |
| 2750         | 28   | 31  | 29  | 20  | 2   |
| 3000         | 28   | 31  | 30  | 27  | 4   |
| 3250         | 28   | 31  | 30  | 29  | 8   |
| 3500         | 28   | 31  | 30  | 30  | 13  |
| 3750         | 28   | 31  | 30  | 31  | 18  |
| 4000         | 28   | 31  | 30  | 31  | 23  |
| 4250         | 28   | 31  | 30  | 31  | 25  |
| 4500         | 28   | 31  | 30  | 31  | 27  |
| 4750         | 28   | 31  | 30  | 31  | 28  |
| 5000         | 28   | 31  | 30  | 31  | 29  |
| 5250         | 28   | 31  | 30  | 31  | 29  |
| ≥ 5500       | 28   | 31  | 30  | 31  | 30  |

\*When 800 TAF < PMI < 1000 TAF, the number of days is determined by linear interpolation between 0 and 28 days.

| PMI<br>(TAF) | Port Chicago<br>(continuous recorder at Port Chicago) |     |     |     |     |
|--------------|---|-----|-----|-----|-----|
|              | FEB   | MAR | APR | MAY | JUN |
| 0            | 0   | 0   | 0   | 0   | 0   |
| 250          | 1   | 0   | 0   | 0   | 0   |
| 500          | 4   | 1   | 0   | 0   | 0   |
| 750          | 8   | 2   | 0   | 0   | 0   |
| 1000         | 12  | 4   | 0   | 0   | 0   |
| 1250         | 15  | 6   | 1   | 0   | 0   |
| 1500         | 18  | 9   | 1   | 0   | 0   |
| 1750         | 20  | 12  | 2   | 0   | 0   |
| 2000         | 21  | 15  | 4   | 0   | 0   |
| 2250         | 22  | 17  | 5   | 1   | 0   |
| 2500         | 23  | 19  | 8   | 1   | 0   |
| 2750         | 24  | 21  | 10  | 2   | 0   |
| 3000         | 25  | 23  | 12  | 4   | 0   |
| 3250         | 25  | 24  | 14  | 6   | 0   |
| 3500         | 25  | 25  | 16  | 9   | 0   |
| 3750         | 26  | 26  | 18  | 12  | 0   |
| 4000         | 26  | 27  | 20  | 15  | 0   |
| 4250         | 26  | 27  | 21  | 18  | 1   |
| 4500         | 26  | 28  | 23  | 21  | 2   |
| 4750         | 27  | 28  | 24  | 23  | 3   |
| 5000         | 27  | 28  | 25  | 25  | 4   |
| 5250         | 27  | 29  | 25  | 26  | 6   |
| 5500         | 27  | 29  | 26  | 28  | 9   |
| 5750         | 27  | 29  | 27  | 28  | 13  |
| 6000         | 27  | 29  | 27  | 29  | 16  |
| 6250         | 27  | 30  | 27  | 29  | 19  |
| 6500         | 27  | 30  | 28  | 30  | 22  |
| 6750         | 27  | 30  | 28  | 30  | 24  |
| 7000         | 27  | 30  | 28  | 30  | 26  |
| 7250         | 27  | 30  | 28  | 30  | 27  |
| 7500         | 27  | 30  | 29  | 30  | 28  |
| 7750         | 27  | 30  | 29  | 31  | 28  |
| 8000         | 27  | 30  | 29  | 31  | 29  |
| 8250         | 28  | 30  | 29  | 31  | 29  |
| 8500         | 28  | 30  | 29  | 31  | 29  |
| 8750         | 28  | 30  | 29  | 31  | 30  |
| 9000         | 28  | 30  | 29  | 31  | 30  |
| 9250         | 28  | 30  | 29  | 31  | 30  |
| 9500         | 28  | 31  | 29  | 31  | 30  |
| 9750         | 28  | 31  | 29  | 31  | 30  |
| 10000        | 28  | 31  | 30  | 31  | 30  |
| > 10000      | 28  | 31  | 30  | 31  | 30  |